National Center Preservation Technology and Training - 3D Digital Documentation Summit Submission

Foamhenge: 3D Modeling and Conservation of a Monumental Sculpture A twenty-five minute presentation with photos, models and graphic images, presented by:

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Abstract

Novel use of technology, 3D digital documentation, model-based engineering, contemporary materials and techniques illustrates the potential that digital documentation and technology has in supporting creative and collaborative problem-solving. A recent project to conserve an important monumental sculpture in GSA's national fine art collection "River Legend" by artist, Dimitri Hadzi, for relocation required by a major renovation of a mid-century high-rise federal building offers a good example.

Creative and environmentally-responsive problem solving is often viewed as doing more with less. With the convergence of tools like laser documentation, 3D modeling and new conservation techniques, we can now benefit from accurate data and contributions from diverse perspectives - information for decision making - which result in greater opportunity for preservationists and conservators to improve treatment of the important works under our care. The unique challenge of caring for "River Legend" demonstrates how this opportunity fulfilled immediate challenges and allowed our team to establish a more expansive goal: to retain as much original integrity as possible. This is evidence of the enhanced benefit that these new technologies and processes, when collaboratively and creatively applied, offer.

"River Legend" is a massive 20 foot tall stone arch created by the late artist in 1976 from five huge sections of columnar basalt. The stones were selectively-tooled, gravity-set, pinned and installed on-site in a plaza as part of the original construction of the Wyatt Federal Building in Portland, Oregon. Two years ago under the American Recovery and Reinvestment Act, plans for the complete renovation of the building to modernize and meet GSA's high performance/green building goals called for temporarily relocating the monumental archway to make way for the base of the construction tower crane. Under the leadership of the chief architect, a collaborative team of art conservators, fine art specialists and design engineers set a goal of executing the move without affect to the work's original integrity despite the lack of input from the artist or access to original documentation. Initial site analysis, subsequent laser scan data and 3D modeling were important contributors to the artwork's condition assessment - informing our treatment plans. Our data indicated that removal by disassembly would require saw-cutting the artists original hand-tooled hairline joinery, loss of much original material and

would have resulted in an unacceptable material change in the appearance and geometry of the original artwork.

Our team chose a challenging path, one that depends on greater dimensional and volumetric accuracy, reduced unknown conditions, more confident risk assessment and offered participants broader data access fostering interactive problem-solving. These are the new opportunities that 3D/BIM modeling technology offers preservationists and conservators today. Our resulting conservation approach, employing high-strength space-frame jig, rigid foam encapsulation and new concrete cutting techniques, was direct, boldly innovative and visually dramatic. Its success offers an elegant solution for a complex problem, broadening the value of digital data documentation and can be applied to the work and future development of conservation techniques by others in the field.